

NX Progressive Die Design

The fastest and most complete progressive die design process

fact sheet

Siemens PLM Software

www.siemens.com/plm

► Summary

NX® Progressive Die Design software delivers a state-of-the-art solution to the shrinking lead times and tighter cost controls facing manufacturers of progressive dies. By combining industry knowledge and best practices with process automation, NX Progressive Die Design streamlines the die development process, from design through to tool validation. NX Progressive Die Design is a comprehensive solution for quality die design, supporting associativity with the part design at every stage of die development and including a variety of functions specific to automotive progressive dies.

Benefits

- Formalize your design process
- Conduct formability analyses on complex freeform parts
- Highly automated strip layout design
- Comprehensive and automated die structure, insert group and standard part design
- Fast and efficient design change propagation across entire process (tool design through machining)
- Capture tooling design knowledge and re-use proven designs
- Virtually prototype functional operation of tooling
- Reduce tool design errors
- Collaborate with customers and suppliers
- Standardize the quotation process
- Eliminate conventional drawings – achieve paperless processes
- Decrease CNC programming time
- Centralize and control design information

Key messages

- Embedded process expertise drives productivity and quality with specialized applications and workflows.
- Speed and consistency are achieved with re-usable design standards, custom component libraries and standard component libraries.

Tooling process expertise

Part preparation. Efficiently design both straight break and freeform sheet metal parts using a broad set of sheet metal features. Leverage feature recognition, bend table and direct unfolding capabilities to design associative intermediate stage parts with pre-bends and over-bends.

Apply One-step Unforming and Formability Analysis technology to create intermediate forms and the flattened blank shapes for complex freeform parts.

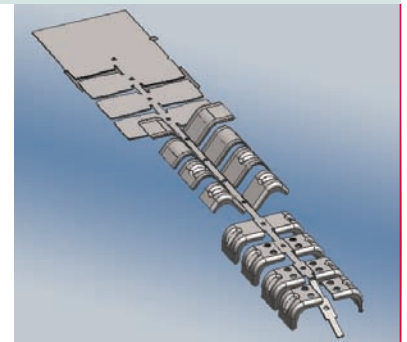
Process design. Utilize strip layout and scrap design tools to quickly prepare the strip layout. Specify the strip details and progression of design stages using a streamlined strip layout workflow. Simulate the manufacturing of the strip to ensure proper ordering of stations.

Structure design. Layout the die base assembly and die inserts for forming and punching operations. Efficiently and associatively design forming and punching tools. Configure the die based on libraries of inserts, die bases and standard parts. Automatically compensate for springback in bending punches and dies. Easily customize library content without programming.

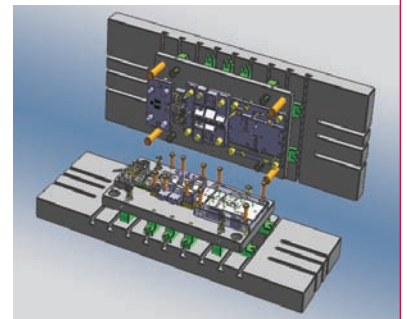
Detailing. Document the progressive die design using automated drawing creation with associative hole tables, 3D annotation and hole tolerances. 3D annotation enables paperless communication and manufacturing.

Scalable expert solution. The full range of Siemens PLM Software can provide the most comprehensive solution sets. Full feature and assembly modeling, Xpress review and Strength Wizard are examples of the rich functional capabilities that are included in the Die Design packages.

Design change and propagation control. Die development is associative with the product design and updates quickly with design changes. Teamcenter® software keeps the whole team working with the right data.



Effective blank generator, blank layout and scrap design functions automate design of the strip layout.



Comprehensive libraries of die bases and inserts accelerate the complete die assembly.

Key Messages continued

Confidence and reputation soar when die designs are validated and verified.

Processes improve when the solution set is integrated.

Re-use of company standards

Configured inputs. Leverage project templates, materials, tools and processes to re-use and adapt proven designs to new dies. Accelerate and optimize the die design process by standardizing processes and components.

Configured outputs. Generate parts lists, drawings, project data structures and NC toolpaths.

Re-usable parts. Build your own re-usable parts and register them in custom libraries. Develop your own re-usable mold base configurations too.

Design validation

Product analysis. Validate part design for manufacturability using data quality analysis, formability analysis and flattened blank shapes. Apply the One-step Unforming and Formability Analysis technology to analyze and design intermediate forms and the flattened blank shapes for complex freeform parts.

Tooling analysis. Validate the progressive die design within the assembly context for proper clearances and reliefs in various positional states. Analyze material usage of the strip layout and press force balance. Simulate the strip progression. Calculate and report press force and force center.

Integrated solution

Design change management. Graphically compare versions of a design for similarities and differences. Swap design versions, control the propagation of change and efficiently update related features, drawings and toolpaths.

Process and data management. Enable team-oriented design with multiple designers working concurrently on a single die design. Synchronize and distribute product and process data across tool design and manufacturing teams and re-use proven design practices.

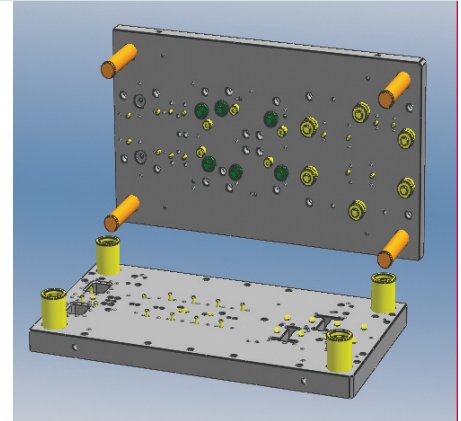
Collaboration. Email lightweight, self-contained viewer files to non-CAD participants in the design process.

Manufacturing integration. Automate manufacturing processes and operation selection via integration of NX Die Design and NX CAM.

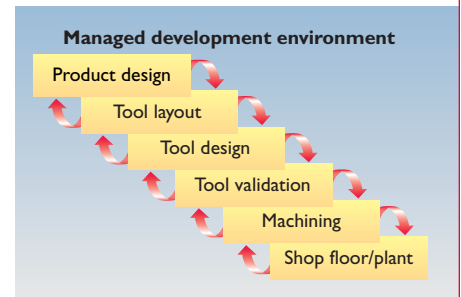
NX Mach 3 Progressive Die Design product content

Progressive die design

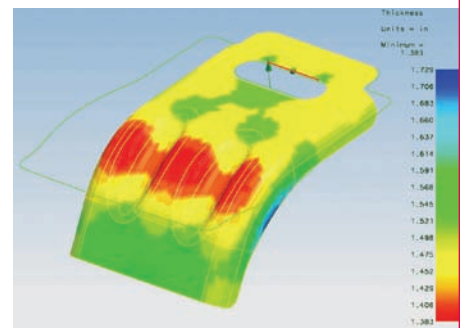
- Sheetmetal feature recognition and associative unfolding for straight break parts
- Uniform and flatten complex freeform parts



Automate the design and manufacturing of die bases using standard components with predefined manufacturing information.



Work concurrently with team members, search, access and re-use project and process data all within the managed development environment.



One-step Formability Analysis is based on a finite element method solver that enables quick and accurate thinning, stress/strain and springback validation. Automatically generate blank and preform profiles.



- Blank design and layout
- Scrap design
- Strip layout design
- Insert group design (bend, blank, burr, chamfer, counter bore, countersink, curl, deburr, dimple, emboss, engrave, form, lance, lifter, mount, pierce, pilot, user defined)
- Relief and pocketing design
- Automated drawing creation and hole charting
- GD&T, 3D annotation, BOM, hole table and wire EDM start hole definition

Standard catalog offerings

- Insert components (die accessories, punches, plates, bushes, pins, dowels, screws, springs, posts): Danly, Dayton, Hyson, Interchangeable, Unified, Strack, Superior
- Die bases: Superior, Strack, Universal
- Die base management
- Standard part management

Validation

- Press force calculation
- Material usage
- Product validation
- Formability analyses – thinning, stress, strain and springback
- Interference checking

Part and assembly modeling

- Straight break sheet metal
- Freeform modeling, basic
- Advanced sheet metal design
- Freeform modeling, advanced
- Solid and feature modeling
- Assembly modeling
- Synchronous Technology
- Advanced assemblies
- DesignLogic
- UDF

Online resources

- Help documentation with tutorials
- Learning Advantage (free and self-paced) – NX Standard Part creation tutorial

Managed development environment

- Vaulting and version management of product and process data
- Web infrastructure for data accessibility
- 2D drawing and 3D part and assembly visualization/markup independent of CAD system
- Supports distributed concurrent team design

Collaboration

- Package design documents and for quoting and design review
- Web publishing

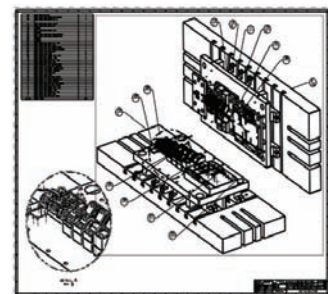
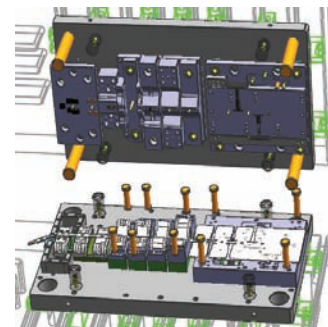
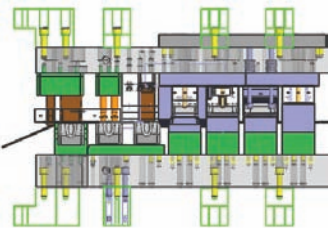
Automation

- NX Open and Knowledge Fusion runtime package

Translators

- DXF/DWG
- IGES
- STEP AP 203 and AP 214

Note: all capabilities described above are also available within NX Mach 4 Advanced Die Manufacturing.



Contact

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